WATER WISE GARDENING AND LANDSCAPE MAINTENANCE SERIES
BEST MANAGEMENT PRACTICES
WATERING YOUNG TREES AND SHRUBS

It's difficult to teach proper watering techniques, necessary to establish and maintain woody trees and shrubs. Part of the problem is that there are many variables that must be considered - each landscape situation has unique components that influence how much and how often water needs to be applied. Then factor in the weather conditions that vary from site to site and season to season, and the issue becomes more confounding.

In the final analysis, proper watering requires that the person responsible must become familiar with the water requirements of the plants in their landscape, and the site and soil where the plants are growing. They must regularly check the soil moisture as a guide, and then apply common sense to supplement rainfall as required to maintain uniform moisture in the plant root zone.

TOO MUCH WATER CAN BE A BIG PROBLEM - In an effort to get new trees and shrubs off to a good start, it's easy to over-react and water too often, thereby keeping the soil excessively wet, causing a different set of problems. Over-watering on poorly drained sites, where water doesn't percolate down readily, can cause wilting (wet wilt) similar to wilt caused by dryness. When the soil stays wet for an extended period of time, root damage can occur due to soil oxygen depletion. These impaired roots are unable to take up and translocate moisture from the soil to the plant, contributing to an induced moisture deficit even though the plant is sitting in wet soil. If you water a wilting plant and it doesn't recover, it may be suffering from too much water.

AUTOMATIC LAWN WATERING SYSTEMS - The watering suggestions included in this publication don't apply to specimen trees growing in an irrigated lawn or to landscape plants growing in beds or borders that are watered on the same schedule as adjacent lawns.

Landscape plants growing under the pattern of an automated irrigation system that has been designed and calibrated to support a stand of turf grass may or may not need supplemental watering beyond what they receive during irrigation cycles. Properly designed automated irrigation systems should permit turf grass areas to be watered separately from adjacent landscape beds and borders.

Compared to lawn grasses, trees in particular, benefit from less frequent but deeper watering. Automatic irrigation systems that cycle frequently may cause trees to drown or conversely, may only moisten the top few inches of soil, which doesn't benefit deeper rooted plants. In such situations, it's important to check the moisture content in the soil around ornamentals and adjust their water supply accordingly. A hollow soil probe is the best implement for this purpose. Some irrigation systems use in-ground sensors to activate a watering cycle based on the moisture content in the soil profile.

Hint: Because automated irrigation systems don't take into account all of the variables discussed in this publication, it's best to turn them on and off manually when necessary to support plant growth and use automatic settings when you will be gone for an extended period of time.

Note: Watering in a manner that wets the foliage of garden or landscape plants during the hottest part of a mid-summer afternoon won't burn the leaves by sunlight being magnified through water droplets. Evaporation of water droplets from the leaf surface has a cooling effect in fact; syringing the foliage of plants during the hottest part of the day can relieve heat stress. That said, there are a couple of precautions that should be observed:

*Water coming out of the end of the hose that has been laying out in the yard can be very hot when first turned on, hot enough to damage plant leaves. Let the hot water run onto bare ground or a mulched area until it cools off before sprinkling plants.

*Salty water in some parts of the state may cause tissue damage to leaves of plants (water samples can be submitted for salinity testing at any local office of K-State Research and Extension).

CONSIDER ALL VARIABLES - The amount of water that young trees and shrubs need during periods of drought stress depends on several factors. Soil type, exposure, plant species, type of nursery stock, plant maturity, cultural practices and weather conditions are some factors that influence moisture demand.

LANDSCAPE SOIL - The soil on a landscape site that has been disturbed during construction is anything but consistent, often hiding buried construction debris, pockets of sand or cement and compacted/inverted soil. Soil texture (clay, sandy or loam), structure and organic matter content influences how much water it will accept and retain. Tight clay subsoil or the presence of an impervious layer may restrict downward movement of water, interfering with drainage.

CHECK DRAINAGE -To check internal/vertical drainage, as a guide to moisture retention, dig a hole about 18 inches across and 18 inches deep and fill it up with water. Allow this water to drain away and then re-fill the hole a second time.

If the water in a pre-moistened planting hole recedes at the rate of about one inch per hour, it should be adequate for most landscape plants. If water remains standing in the hole after 18 - 24 hours, take steps to improve drainage (elevated beds, install tile) or select water tolerant plant species. Obviously, the longer the soil profile retains moisture, the longer the watering interval can be extended.

SITE FACTORS - Factors such as slope and exposure to the elements, influence how much supplemental water landscape plants will require. Exposure to sun and hot drying winds increase moisture demand; protected, shaded sites may require less water. Additionally, man-made structures (buildings, berms, hardscape) alter the natural patterns of sunlight, wind and water infiltration and retention (remember that foundation plantings growing where a wide eave sheds water away from the house may not benefit from rainfall like plants growing farther from the building).

Compaction and steep slopes may contribute to runoff; hard-scaped surfaces (patios, decks, driveways, sidewalks) may restrict the available rooting area, impede water infiltration and interfere with oxygen entering the soil. The practice of mulching, discussed below, influences how rapidly moisture evaporates from the soil.

PLANT SPECIES - Learn about the moisture requirements of plants growing in your landscape. Some plant species are very drought tolerant, even suitable for xeriscape plantings, while others require uniform soil moisture and resent even brief periods of intermittent drought. It's wise to group plants with similar water requirements together in the landscape.

NURSERY STOCK - Container grown plants are the most common form of nursery stock sold at retail garden centers. These plants are subject to a condition called interfacing, which reflects differences between the soil/media that the plants were grown in at the nursery (bark, peat moss, vermiculite, perlite, etc.), and the soil that is present on the planting site. Problems arise when the medium in the root ball accepts and retains moisture differently than the surrounding soil. Sometimes, the backfill soil can be thoroughly saturated but the medium in the root ball is barely moistened.

WATERING AT PLANTING TIME - Water thoroughly at planting time and again the following day (to thoroughly settle the soil and eliminate air spaces).

WATERING YOUNG TREES AND SHRUBS DURING ESTABLISHMENT - In the absence of natural precipitation, these plants require regular watering until they become established. Depending on when they are planted, it may take a couple of years for shrubs to become established. The establishment period for trees extends through the first three growing seasons or longer for larger diameter trees - one year per inch of trunk diameter (measured six inches above the ground).

GUARANTEE/WARRANTY - If you purchase a tree or shrub that has a survival guarantee that may be contingent upon the post-planting care that you provide, be sure to follow the watering instructions provided at the point of purchase.

CHECK MOISTURE STATUS - Because the soil in a planting hole will dry out at a different rate, reflecting the variables discussed above, it's important to monitor soil moisture as a guide. It's especially important to make sure that the original root ball is being thoroughly moistened, as well as the back fill soil. Scrape off surface mulch, then use a spade or trowel to expose the soil in the top few inches and feel its moisture content, both in the root ball and beyond. A hollow soil probe, that permits the user to extract cores of soil, is one of the best tools a gardener can have for monitoring soil moisture content. These may be available at local garden centers, or they may be able to order one for you.

EARLY ESTABLISHMENT - During early establishment, young trees and shrubs need the interface between the original root ball and the backfill soil to remain uniformly moist. Water can be retained around the base of newly planted trees by building a low berm just outside of the planting hole. This will create a basin that will retain moisture until it soaks into the root ball and adjacent back fill soil. Water retention bags, made specifically to retain and slowly release water around the base of young trees are also available.

As a rule, newly transplanted trees, growing in a loam soil, need at least 10 gallons of water per week (or 10 gallons applied twice a week in sandy soil) adjust for rainfall. Larger, recently transplanted trees will require more water (10 gallons per inch of trunk diameter - six inches above the ground).

Plants growing in tight clay soil may not need to be watered as often, a reason to check the soil moisture content as a guide. An alternative to a hand held garden hose is a five gallon bucket with a small hole drilled in the side near the bottom. Simply fill the bucket and let the water slowly leak out.

Newly planted shrubs should also be watered thoroughly about once a week. Basins, as described above, work well around individual shrubs.

During the growing season of the second and third years after planting, continue to water trees and shrubs every 10 to 14 days if it doesn't rain and the soil moisture content indicates a need. As the root system of these plants extends during the establishment, water in a wider ring around the plants, soaking the soil to a depth of 8 to 12 inches deep.

GRASS COMPETITION - Turf grass growing over the root system of young trees competes with the tree for moisture. To reduce this competition, maintain a grass free area around the base of the young tree extending out to the drip line (outer branch spread) or beyond.

USE MULCH - An organic mulch around the base of young trees and shrubs is recommended to keep the soil moisture content more uniform and to stabilize the soil temperature. Apply and maintain (re-apply as necessary) an organic mulch about 2 to 3 inches deep, in a ring around the base of the tree to cover the grass free area (at least three feet out - to create a mulch ring at least six feet across). Don't apply the mulch too deep or it may interfere with the infiltration of moisture from rainfall or irrigation. As trees mature, this mulched ring can be enlarged, extending out several more feet from the base of the tree.

Keep the mulch a few inches away from the base of the plant. Mulch in contact with the lower bark may keep the bark wet, contributing to a canker infection or basal decay. Especially avoid tall cones of mulch around the trunk.

Avoid the use of black plastic or fabric weed barriers as a mulch in landscape beds or borders. These plastic/fabric mulches can cause the soil to stay excessively wet beneath and can interfere with gas exchange into and out of the soil.

WINTER WATERING - Be sure to thoroughly soak the soil around young trees and shrubs before the ground freezes in the fall and monthly if weather permits. During dry winters, drag out the hose and water when the ground isn't frozen and a few days of mild weather are predicted (especially evergreens and young plants that are persisting on a limited root system). Be sure to disconnect and drain the hose, after use.